

Biology and Control of Yellow Nutsedge

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Nutsedge Background

- **Yellow nutsedge (*Cyperus esculentus*) is a common weed on the Central Coast in landscapes, gardens and agriculture**
- **Sometimes referred to as “nutgrass”, but it is not a grass**
- **It is a perennial plant that survives as tubers (nutlets) over the winter**

Nutsedge Background

- **Is a weed on all continents**
- **Tolerant of wet soil conditions**
- **Can handle many soil types but is typically found on sandier soils in Monterey County Ag**
- **Typically begins to emerge when soil temperatures are between 60-65 F**
- **Starts emerging in March and April in Monterey County and continue to fall**

Nutsedge Background

- **In California and several other states it is a state-listed noxious weed**
- **It is cultivated in some countries (i.e. north Africa and Spain) for the edible, almond flavored tubers**
- **In Spain they make a drink called “horchata de chufa”**

- **It is a sedge:**

- 1.The stems are solid and triangular in cross section**

- grasses have hollow stems that are round

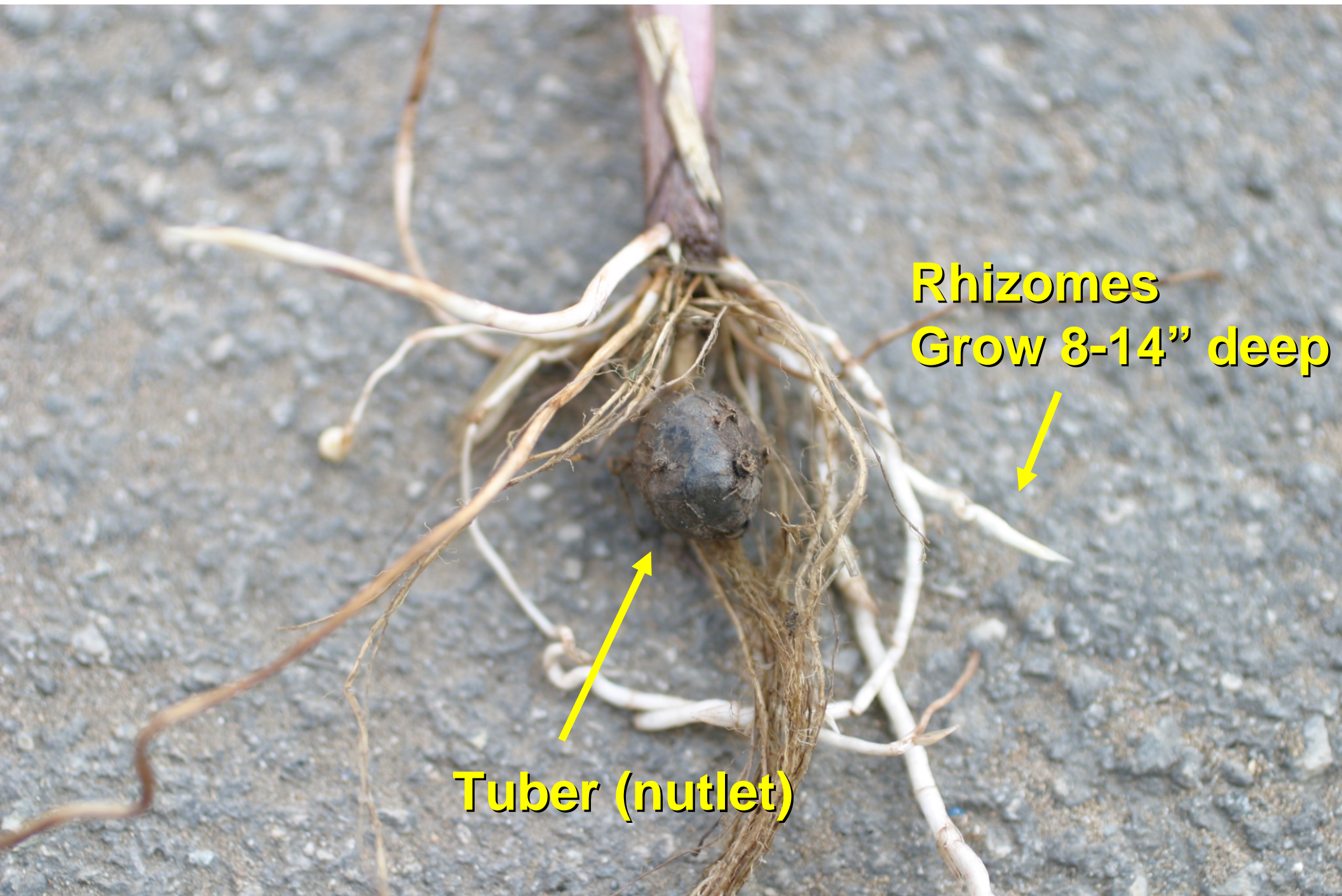
- 2.The leaves are thicker and arranged in sets of three**

- grasses are arranged in sets of two



**It does form seed
but reproduction
by seed is rare**





**Rhizomes
Grow 8-14" deep**

Tuber (nutlet)

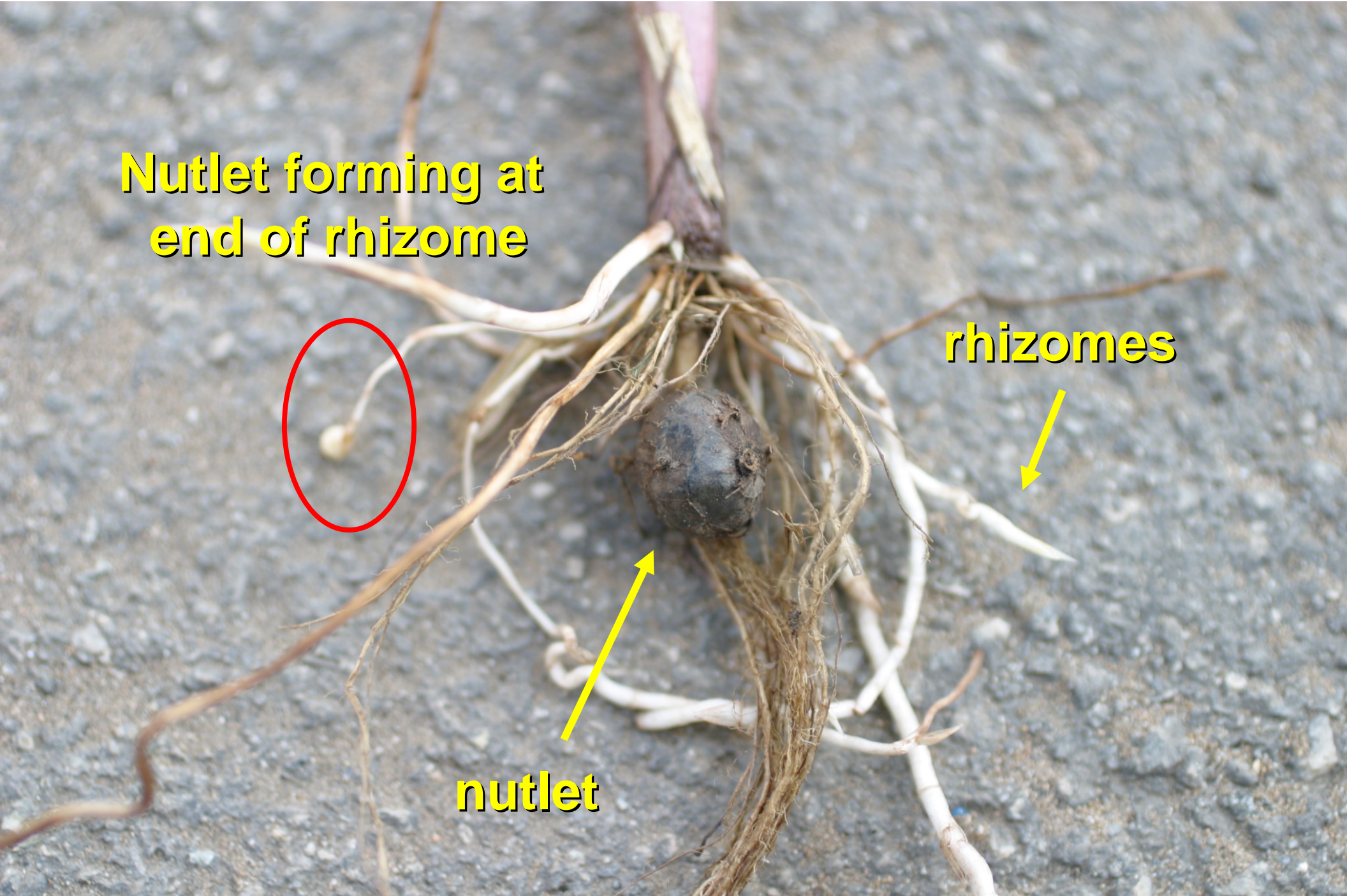
**Nutlet forming at
end of rhizome**



rhizomes



nutlet



**Tubers have 10 – 15 buds
(similar to eyes on a potato).
They sprout to form new
plants.**

**Plants emerge vigorously
due to the large quantity of food
reserves in the nutlet**



- **Once the plant has developed more than 5 leaves it begins to form nutlets**



- They reproduce from the nutlets from the mother plant
- Under ideal conditions, a mother plant can make 1,900 daughter plants and 7,000 tubers in one year
- They can form spreading masses 10 feet or more in diameter



Closely Related Species

- There are four closely related species in Monterey County
- Tall Flatsedge can be confused with yellow nutsedge in Monterey County
- It has more of bunching growth habit (not spreading)
- Found in wet places





**Yellow Nutsedge
Flowers**

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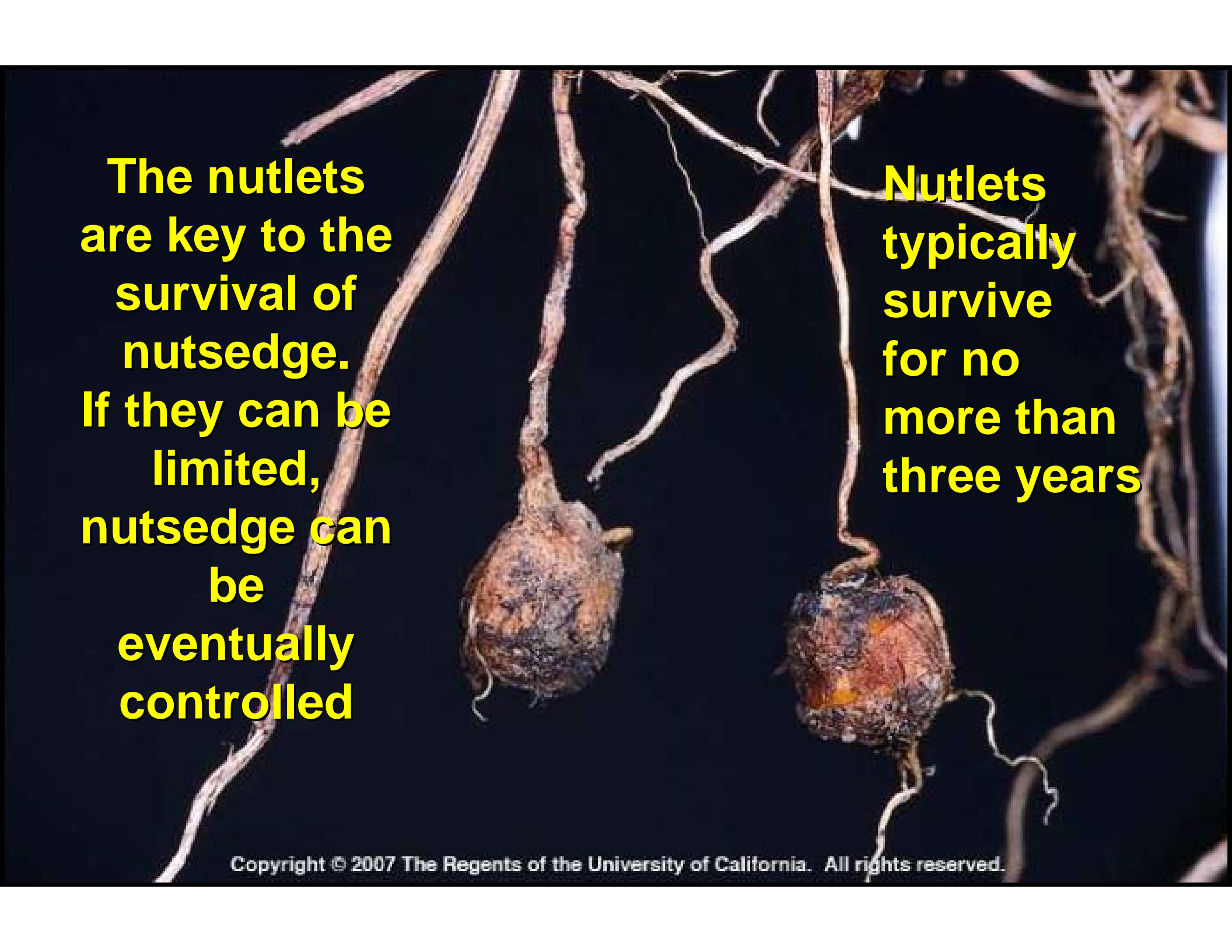


**Tall Flatsedge
Flowers**

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Yellow Nutsedge Control

- **Chemical**
- **Cultural**

The image shows two nutlets, which are small, rounded, brownish structures, each attached to a network of thin, light-colored roots. The roots are spread out against a solid black background. The nutlets are positioned in the center-left and center-right of the frame. The text is overlaid on the image in a bright yellow font.

**The nutlets
are key to the
survival of
nutsedge.
If they can be
limited,
nutsedge can
be
eventually
controlled**

**Nutlets
typically
survive
for no
more than
three years**

Yellow Nutsedge Cultural Controls

- **Hand removal**
- **Cultivation**
- **Mulch**
- **Shading**
- **Biological control**

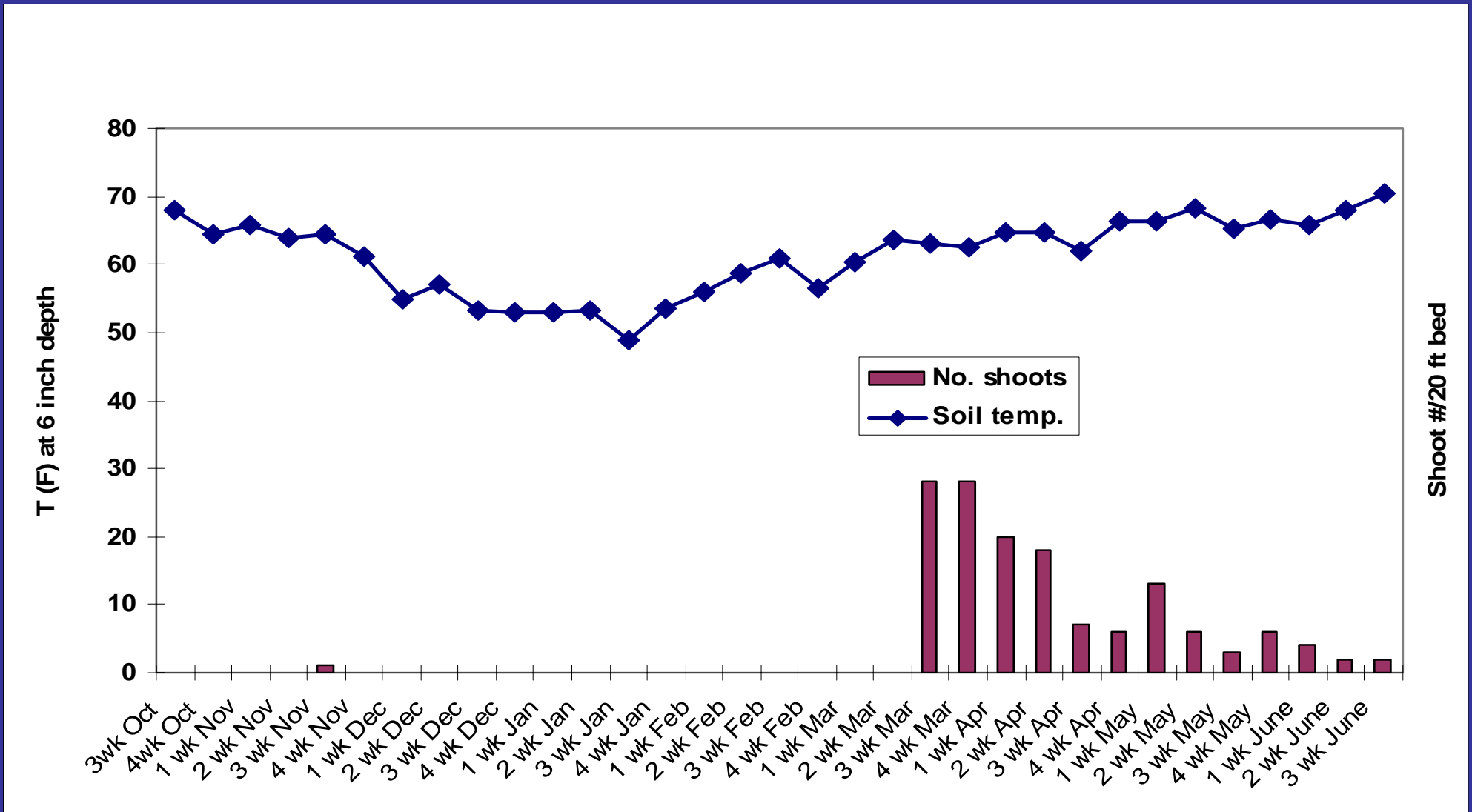
Cultivation/Hand Removal

- To limit nutlet production, remove nutsedge plants before they have 5-6 leaves
- They will not have formed nutlets by this stage
- Weeding will need to be repeated every 2-3 weeks for the duration of the summer

Cultivation/Hand Removal

- Continually removing shoots eventually depletes the energy reserves in the nutrient
- 60% of the tuber energy goes to making the first plant and 20% for the second plant
- **HOWEVER**, the plant can continue to resprout 10 – 12 times

Nutsedge germination, winter-spring 2007



Oleg Daugovich, 2007

Mulching

- **Yellow nutsedge will emerge through rock and bark mulches**
- **It will also penetrate black polyethylene plastic mulches**
- **Landscape fabrics will effectively suppress nutsedge growth**



UC Statewide IPM Project
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Photos by Oleg Daugovich, 2007

Shading

- **Summer cover crops such as Sudangrass reduce its vigor and reproduction**
- **Planting tall landscape plants that provide dense shade are also capable of shading out this weed**

Biological Control

- **No effective biological control has yet been found for this weed**

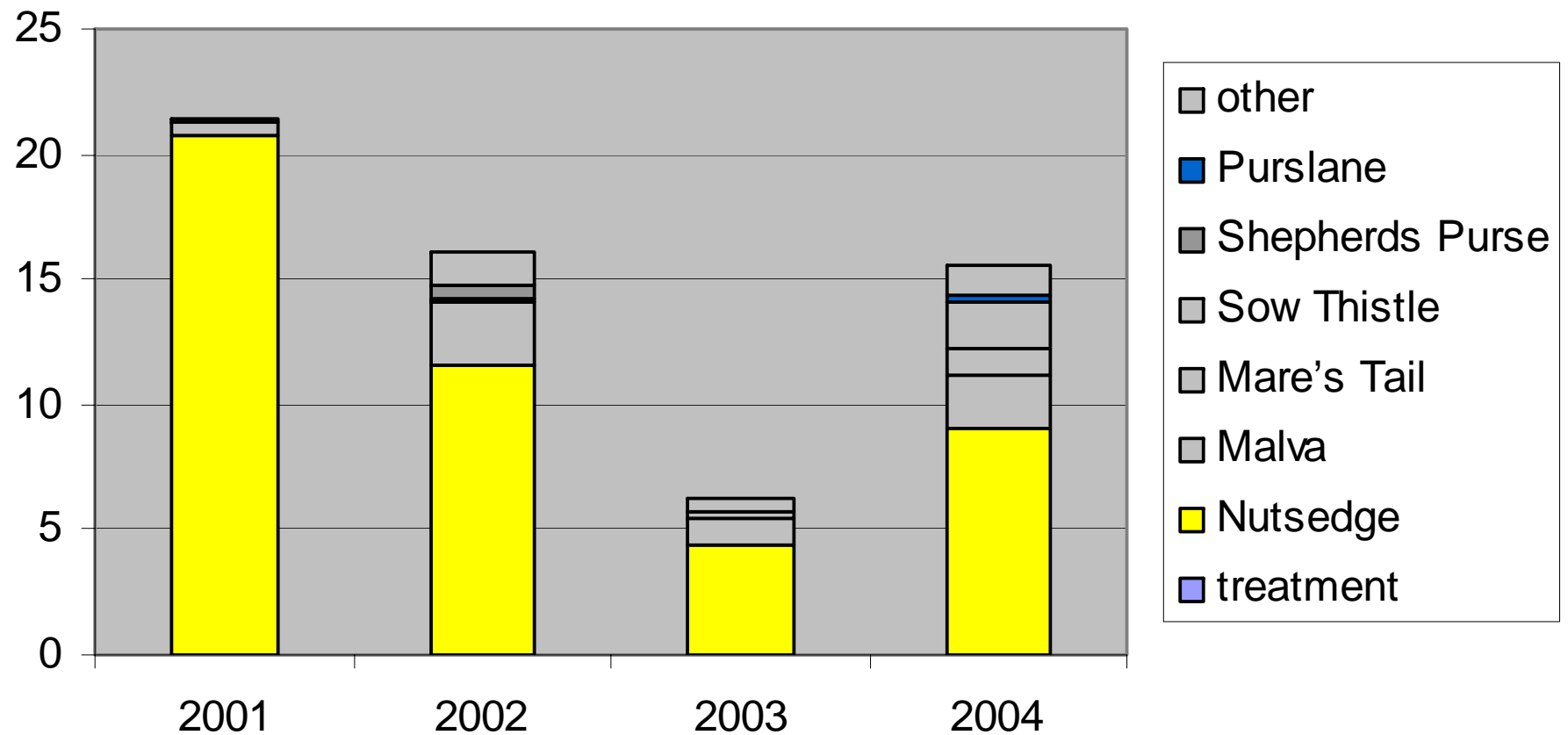
Yellow Nutsedge Chemical Control

- **Glyphosate (Roundup)**
- **Glufosinate (Finale)**
- **Halosulfuron (Manage)**
- **EPTC (Eptam)**
- **Dichobenil (Casoron)**
- **MSMA**
- **Pelargonic acid (Scythe)**
- **Metolachlor (Pennant)**
- **Linuron (Lorox)**

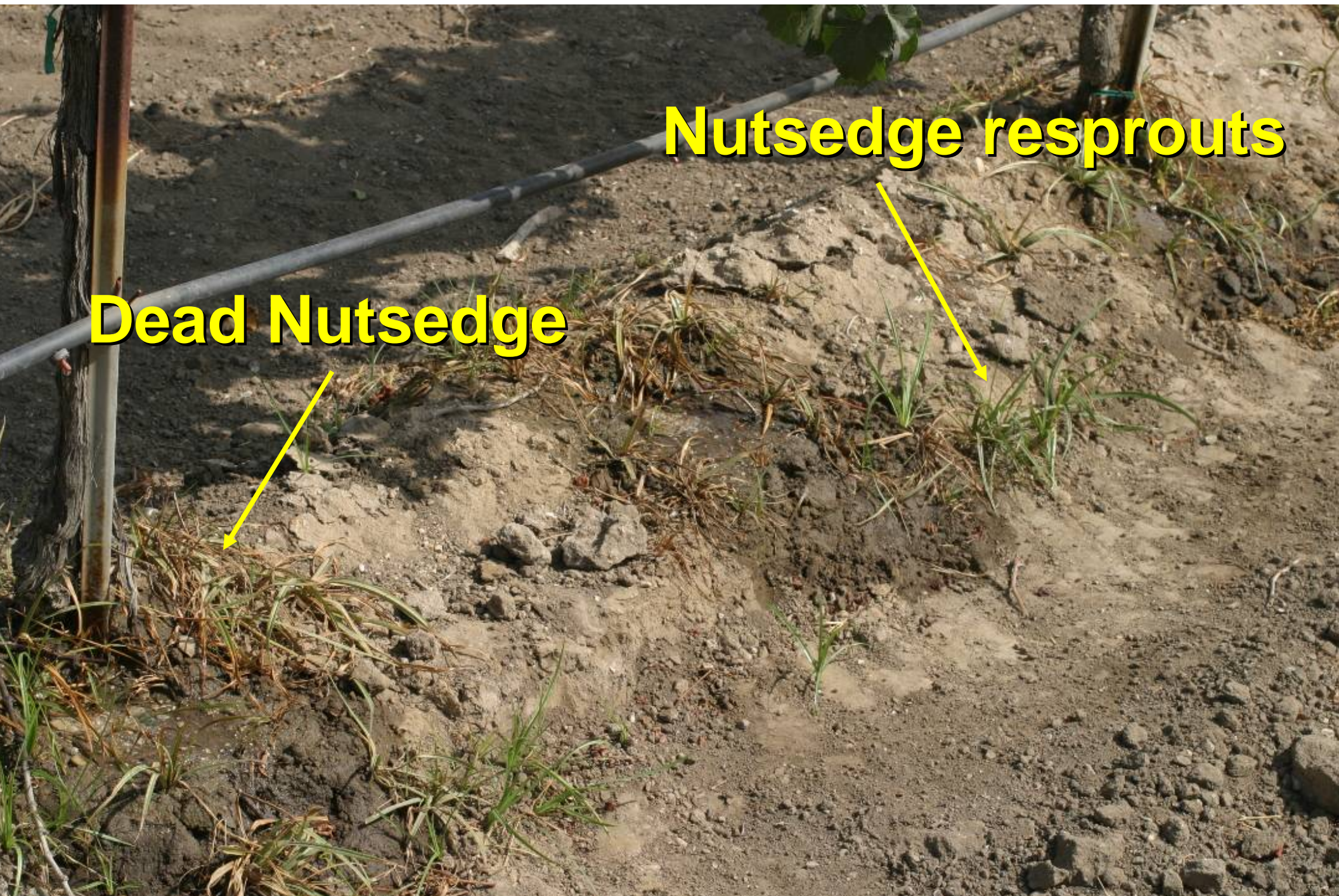
Nutsedge Control with Glyphosate

- It is possible, but multiple applications are required
- Timing affects the effectiveness of applications
 - Early applications reduced nutlet formation
 - The glyphosate moves to the tips of the rhizomes
 - As plants matured the impact of glyphosate on tubers decreased as the tubers became dormant

Change in Nutsedge Population In the Preemergence Treatment Over Four Years - Summer Evaluation





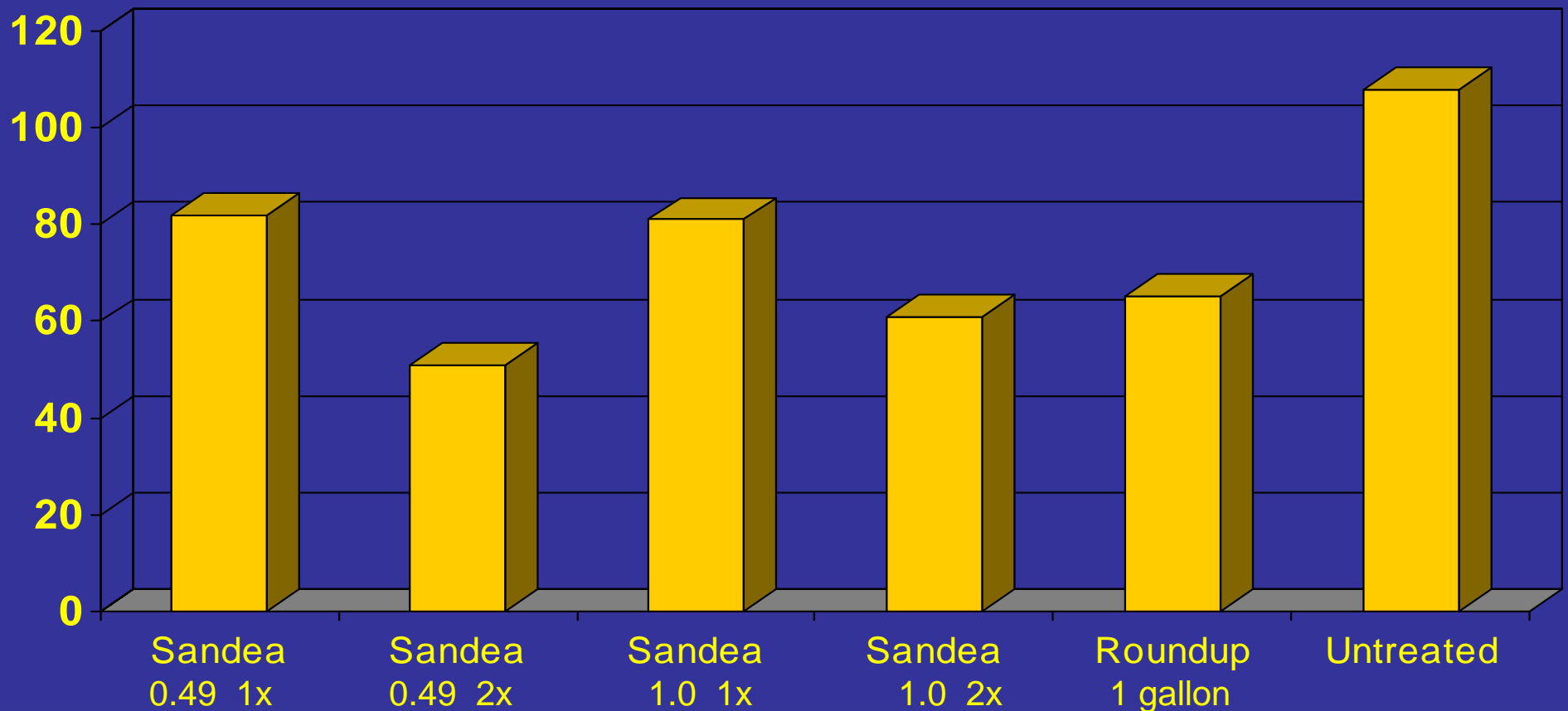


Dead Nutsedge

Nutsedge resprouts

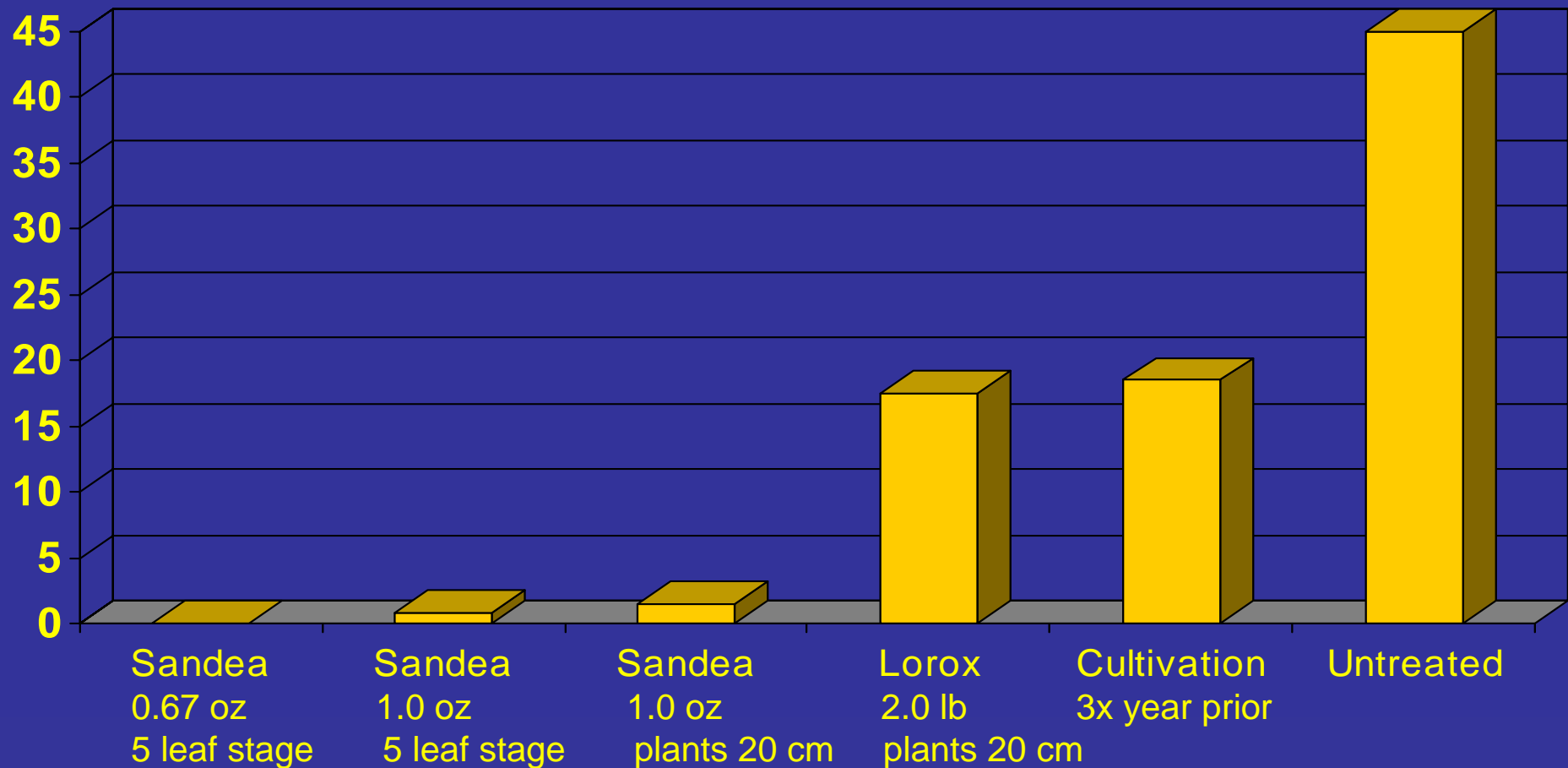
Asparagus Studies 2001

Number of Nutsedge Plants Following Various Treatments Year 1



Asparagus Studies 2002

Number of Nutsedge Plants the 2nd Year



Onion Trials



- Onions are particularly susceptible to competition from nutsedge
- Outlook (dimethenamid) was registered this year and provides preemergence activity on onions
- It is registered for use at 2nd true leaf stage



- **The issue that we have in our area is that nutsedge is beginning to emerge by the 2nd true leaf stage**
- **Outlook is not a post emergence**
- **Our efforts focused on trying to find ways to make Outlook work given the synchrony issues**

2006 Onion Weed Evaluations

Treatments	Rate	15 DAT	36 DAP
Dacthal FB Goal 2XL	----	5.1	8.0
Outlook Dacthal FB Goal 2XL	14 oz	7.3	0.0
Outlook Dacthal FB Goal 2XL	28 oz	2.8	0.0
Outlook Dacthal FB Goal 2XL	7 oz + 7 oz	3.7	0.0
Dual Magnum Dacthal FB Goal 2XL	1 pint	3.4	0.0

2006 Onion Weed Evaluations

Treatments	Rate	72 DAP	120 DAP
Dacthal FB Goal 2XL	----	82.0	89.0
Outlook Dacthal FB Goal 2XL	14 oz	2.0	2.3
Outlook Dacthal FB Goal 2XL	28 oz	0.0	1.3
Outlook Dacthal FB Goal 2XL	7 oz + 7 oz	0.0	1.3
Dual Magnum Dacthal FB Goal 2XL	1 pint	0.3	4.3



Untreated

**Outlook at 56
Ounce/A (4x rate)**



Untreated

2007 Trials

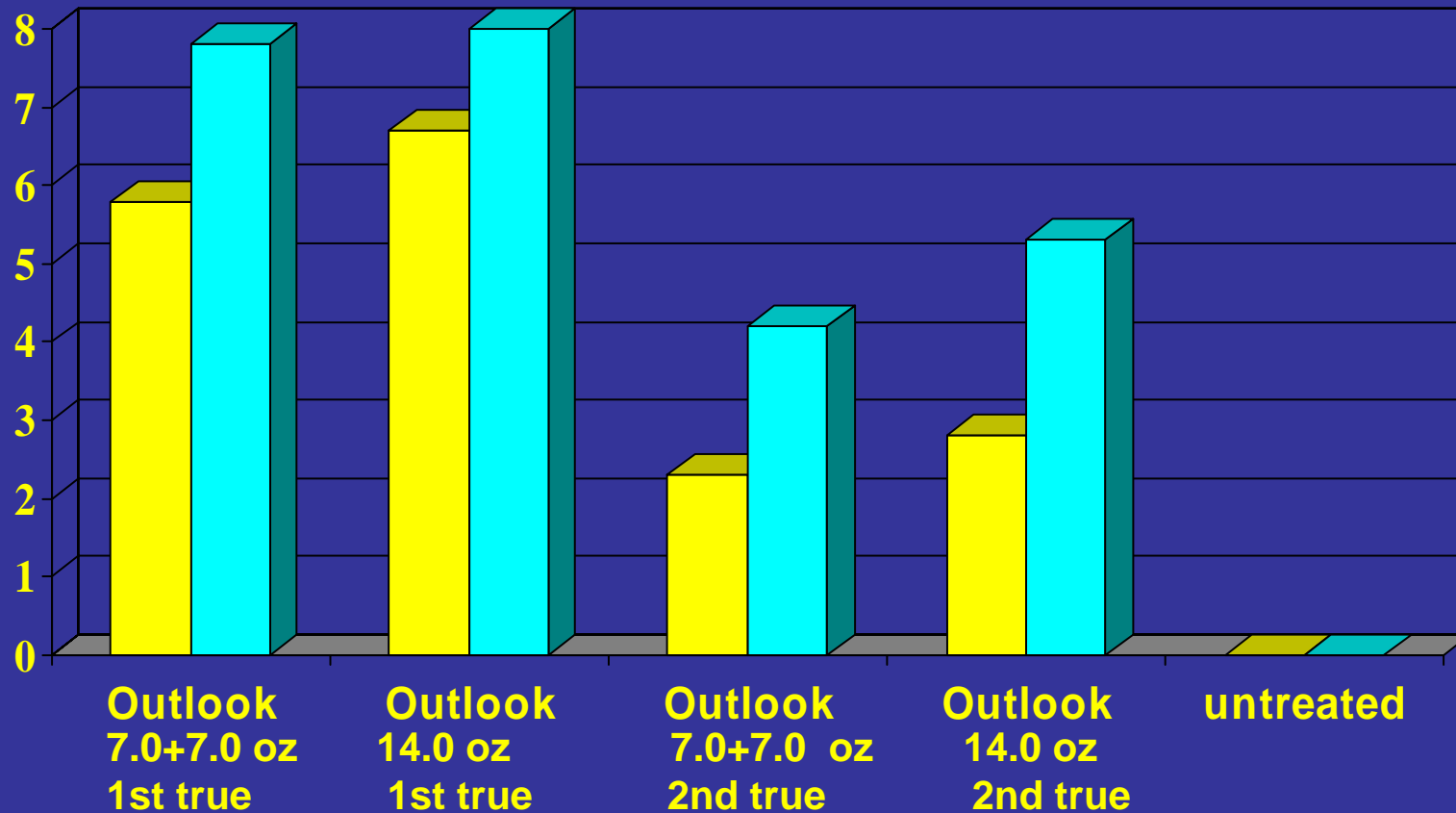
We focused on the issue of how to make Outlook work given that much of the Nutsedge had emerged by the 2nd true Leaf stage



Treatment	Material/A	Application
7-7-0-7 Fb Outlook 6.0 Fb Outlook 6.0	35 gallons 7.0 oz 7.0 oz	1st true leaf 1st true leaf 14 days later
7-7-0-7 Fb Outlook 6.0	35 gallons 14.0 oz	1st true leaf 1st true leaf
7-7-0-7 Fb Outlook 6.0 Fb Outlook 6.0	35 gallons 7.0 oz 7.0 oz	1st true leaf 2nd true leaf 14 days later
7-7-0-7 Fb Outlook 6.0	35 gallons 14.0 oz	1st true leaf 2nd true leaf
Untreated	----	----

Weed Control Outlook After Acid Fertilizer

April 23 and May 4





Untreated



Outlook 14.0 oz
1st true leaf
after 7-7-0-7

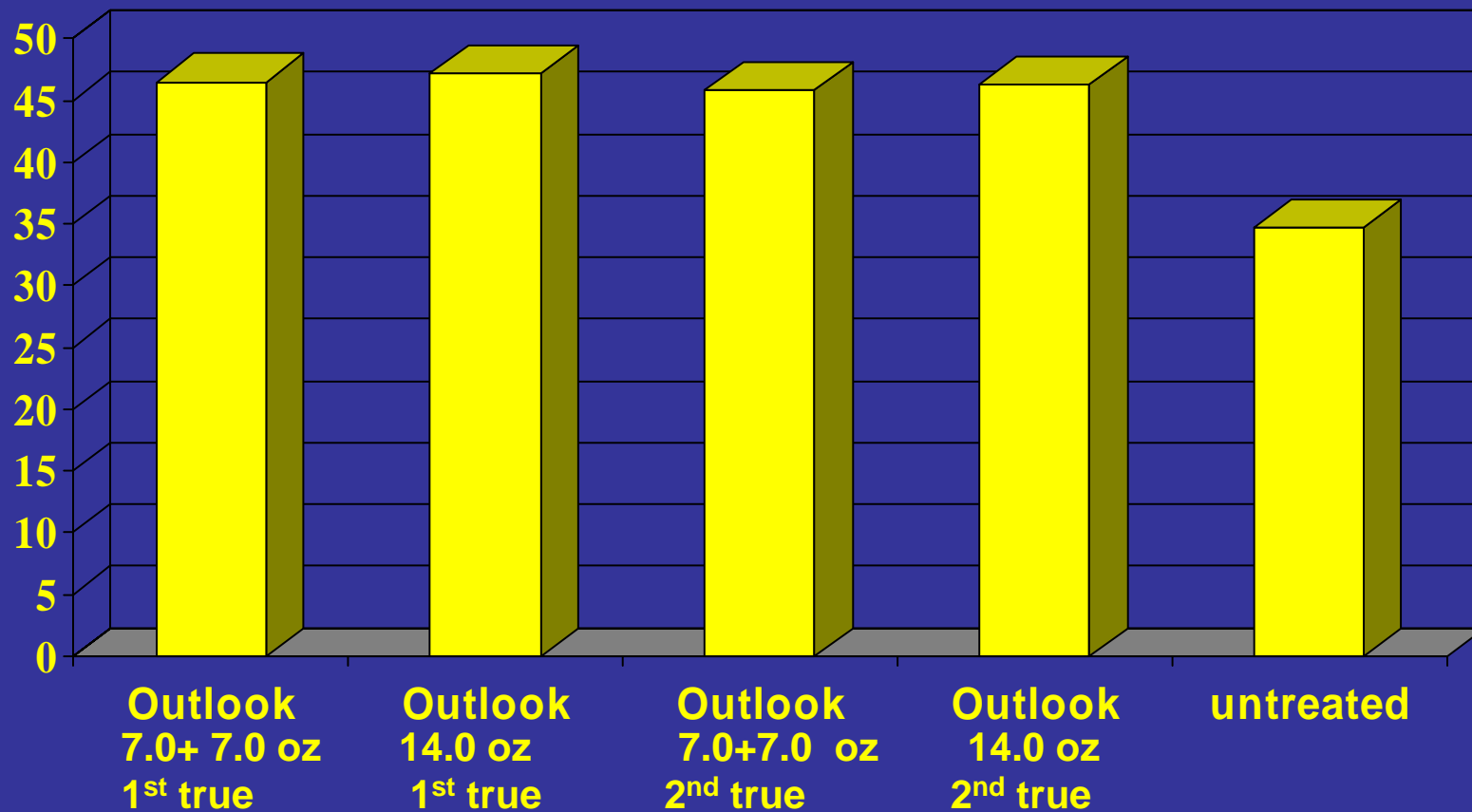


Untreated

**Basagran
+ Outlook**

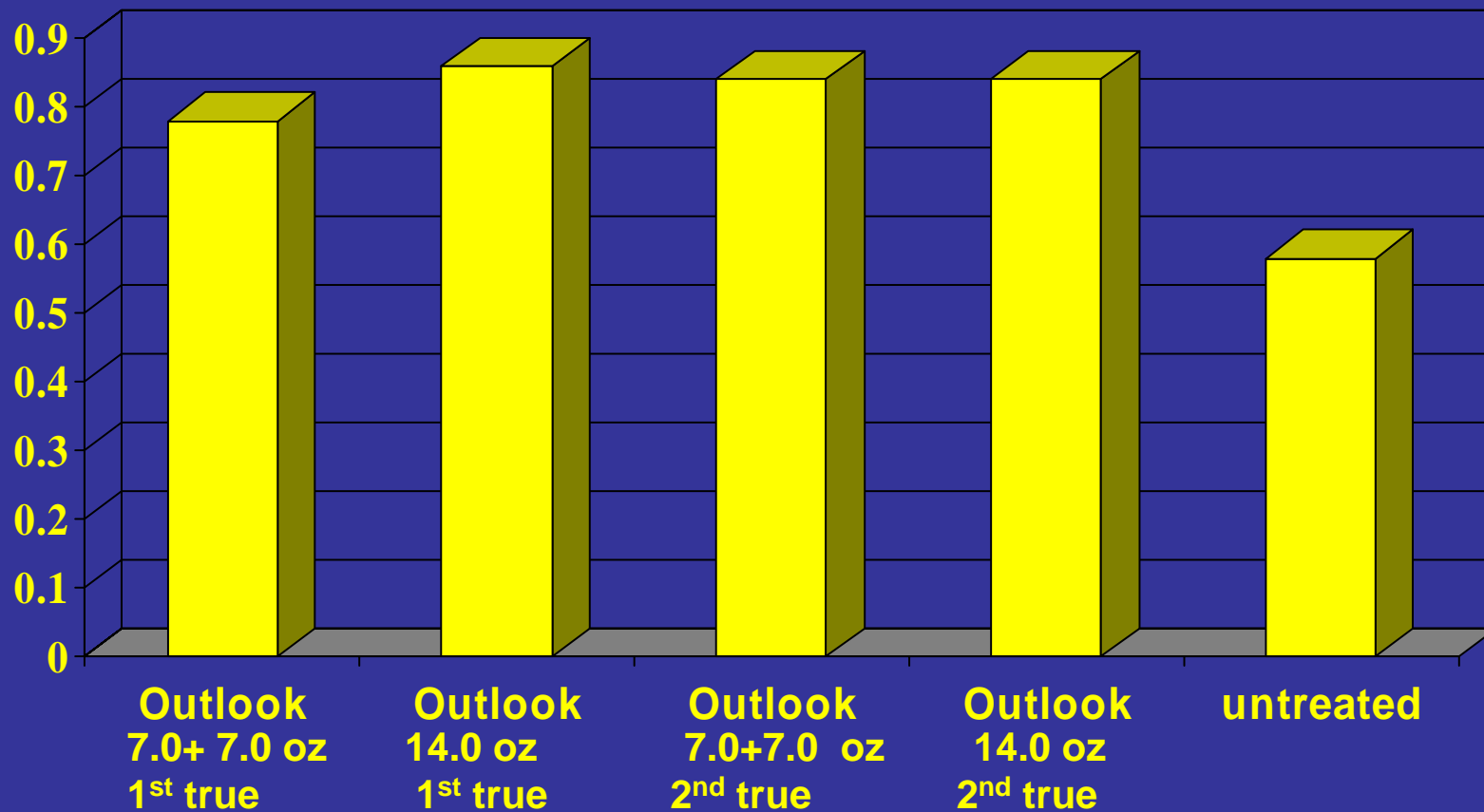
Onion Yield (lbs/plot) Outlook After Acid Fertilizer

September 27, 2007



Onion Yield (lbs/head) Outlook After Acid Fertilizer

September 27, 2007



Summary

- **Yellow nutsedge is weed with tremendous ability to spread**
- **It can be managed with a careful attention to cultural techniques and/or herbicides**
- **Diligence and persistence are needed**